

2.0 Alternatives

The US Highway 53 Virginia to Eveleth Draft Environmental Impact Statement (EIS) (December 2014) is incorporated by reference and is considered part of the Final EIS. Much of Chapter 2 from the Draft EIS is repeated here, but parts have been abbreviated.

This chapter describes the preferred alternative identified for the US 53 project. It first summarizes alternatives dismissed through the Scoping process, followed by alternatives analyzed in the Draft EIS and dismissed in favor of the preferred alternative. It then describes the preferred alternative and the rationale for its selection.

2.1 Alternatives Dismissed Prior to the Draft EIS

Of the alternatives considered during the Scoping process, the following were dismissed from further consideration as part of the September 2012 Scoping Decision Document (SDD) or the September 2013 Amended Scoping Decision Document (ASDD). The corridors are illustrated in [Figure 2.1-1](#) and the alternatives are shown in [Figure 2.1-2](#).

2.1.1 West Corridor Alternatives

2.1.1.1 Alternative W-1

Alternative W-1 largely followed existing highways (Minnesota Trunk Highway 37 (MN 37) and County Road 7 (Co. 7)). It was eliminated from further consideration since other Build Alternatives (i.e., Alternatives M-1 and E-2) would meet all of the identified project needs with less severe social, economic, and environmental impacts.

2.1.1.2 Alternative W-1A

Alternative W-1A was developed as part of an expanded look at alternatives in 2013 and included in the ASDD. One change to Alternative W-1 from the initial Scoping Document (SD)/SDD was the addition of a direct connection from Co. 7 to US 53 and extensive intersection improvements at Co. 7/Co. 101, MN 37/Co. 7, and MN 37/existing US 53. This alternative was not carried forward for further consideration in the Draft EIS since other Build Alternatives (i.e., M-1, E-1A, and E-2) would meet all of the identified project needs with less severe social, economic, and environmental impacts.

2.1.1.3 Alternative W-2

Alternative W-2 provided a shorter route than Alignment W-1 by diverting from MN 37 at the railroad corridor, running parallel to the railroad line, and connecting to Co. 7 north of Co. 101. It was eliminated from further consideration because, while reducing overall length, the use of new alignment would result in greater construction costs and more acres of right-of-way acquisition.

2.1.1.4 Alternative W-3

Alternative W-3 paralleled existing railroad corridors and did not use the Co. 7 corridor, in effect creating a new highway corridor parallel to Co. 7 between MN 37 and US 169. It was eliminated from further consideration because, while reducing overall length, the use of new alignment would result in greater construction costs and more acres of right-of-way acquisition.

2.1.1.5 Alternative W-4 (Two Options – “A” and “B”)

Unlike the other West Corridor alternatives, Alternative W-4 used existing Co. 101 from US 53 through the communities of Eveleth and Leonidas to connect to Co. 7 and turn north toward Virginia. Due to the urbanized character of the corridor in Eveleth, two options were considered for the Scoping review.

- **W-4A (two lanes through Eveleth):** This alternative was eliminated from further consideration because it only partially meets the project Purpose and Need. In addition, it would not substantially decrease social, economic, and environmental impacts as it would have substantial direct impacts within Eveleth, so there was no reason to retain this alternative as an approach to avoid adverse impacts.
- **W-4B (four lanes through Eveleth):** This option was eliminated from further consideration because the expansion of Co. 101 to a four-lane facility through Eveleth would cause substantial community impacts for right-of-way, property relocations, and business access. This route, like the other West Corridor alternatives, would have negative impacts to access in Virginia and would not provide the benefit of avoiding conflict with ferrous resources as would other West Corridor alternatives. Additionally, Co. 101 crosses the existing UTAC permit to mine area and environmental setting boundary, and the mine operator has indicated that it would likely close Co. 101 to through traffic at a future time (estimated by 2024) when it resumes mining in this area.

2.1.2 Middle Corridor Alternative

2.1.2.1 Alternative M-2

Similar to Alternative M-1, Alternative M-2 followed the grade created by the now backfilled Auburn Pit through the UTAC mine. Alternative M-2, however, provided an option that would re-join existing US 53 closer to 2nd Avenue. This alternative was not carried forward for further consideration because its conflict with ferrous resource reserves greatly increased anticipated business impacts and related potential compensation and legal costs/risks. Furthermore, Alternative M-2 had many transportation performance and construction cost similarities to Alternative M-1 and did not avoid the potential for mine business risks. Therefore, the extra expense for the additional ferrous resource reserve conflict was not warranted.

2.1.3 East Corridor Alternatives

2.1.3.1 Alternative E-1

Alternative E-1 was the closest of the East Corridor alternatives to the existing alignment. It would maintain that straight east-west route, cross the Rouchleau Pit at one of its widest locations, and then turn south near the existing Landfill Road in order to connect back to US 53. Alternative E-1 was not carried forward for further consideration because of the potential for mine air quality compliance concerns (compared to other East Corridor alternatives), higher right-of-way costs due to conflicts with the existing UTAC permit to mine area and environmental setting boundary, and potential construction costs due to crossing the widest portion of the Rouchleau Pit.

A **permit to mine** means legal approval has been given by the commissioner of the Minnesota Department of Natural Resources to conduct a mining operation. The only permit to mine boundary (extent of permit limits) within the study area is issued to UTAC as the mine operator and is shown in **Figure 2.1-2**. Obtaining a permit to mine for a new mine operation requires an environmental evaluation and mining plan. Any non-mining activity proposed within the permit to mine area would potentially be in conflict with mining operations and deemed a potential business impact to the mine operator and landowner.

The **environmental setting boundary** is beyond the permit to mine area and includes additional areas that may be directly or indirectly affected by mine activity. It is the boundary most closely aligned with the area leased by the mine operator.

Therefore, the term “**permit to mine**” is used when describing the area of mine operations, and the term “**environmental setting boundary**” is used when referring to the broader, legal limits of the UTAC mine.

2.1.3.2 Alternative E-2A

Alternative E-2A is a sub-alternative of Alternative E-2. A section of Alternative E-2 north of MN 135 was shifted further to the east in an attempt to completely avoid any encumbrance of ferrous resources and/or mining exploration (non-ferrous metallic resource leases) at the edge of the permit to mine boundary, Biwabik Iron Formation, and mineral rich stockpiles along Landfill Road. Moving the alignment further to the southeast would encroach upon the Iron Range Off-Highway Vehicle Recreation Area (OHVRA) to a greater extent than Alternative E-2, isolating a large portion of the recreation area that would be difficult to mitigate. As such, it was not carried forward for further study in the Draft EIS since it was anticipated to result in substantial impacts to the OHVRA while providing no identifiable benefits over Alternative E-2.

2.1.3.3 Alternative E-3

Alternative E-3 was similar to Alternative E-2; the primary difference was that Alternative E-3 provided a longer route to make the curve from the Midway area back into Virginia. This alternative was not carried forward for further consideration because it offered relatively few benefits compared to Alternative E-2 and would generally require more construction costs or more complex right-of-way acquisition due to greater conflicts with privately owned lands and minerals.

2.1.3.4 Alternative E-4

This was the only East Corridor alternative that did not reuse the existing 2nd Avenue interchange. Instead of connecting back to US 53 at 2nd Avenue, this alternative was routed to the north side of Virginia, where it used the 9th Street North corridor. It was not carried forward for further consideration for reasons that include the impacts to business access and community cohesion, as well as high construction costs. Potential direct impacts to Virginia's water supply were also a concern.

2.2 Alternatives Studied in the Draft EIS and Dismissed

The Draft EIS evaluated the three Build Alternatives (Alternatives M-1, E-1A, and E-2) and two No Build Alternatives (Existing US 53 Alternative and No Build Alternative). These alternatives are shown on [Figure 2.2-1](#) and are described in detail in the Draft EIS. The Draft EIS identified Alternative E-2 with the Interchange Option as the preferred alternative, carrying forward both the Straight Option and the Curved Setback Option for further refinement. (Alternative E-2 options are described in Section 2.3 below.) The alternatives dismissed in favor of the preferred alternative are described below. Section 10.3.2 of the Draft EIS provides a more detailed discussion on the rationale for rejecting the following alternatives.

2.2.1 No Build Alternative (Easement Agreement Area Closed)

The No Build Alternative responded to the easement terms by closing the segment of US 53 within the existing easement agreement area, resulting in traffic being rerouted to existing highways. Signage would have been used to officially mark the rerouting of US 53, which would follow existing MN 37, Co. 7, and US 169 (see [Figure 2.2-2](#)). No transportation systems management (TSM) elements (i.e., maintenance or operation improvements) were included in this alternative in order to represent a true No Build Alternative and because TSM improvements on the existing roadways would not provide the needed traffic capacity given the closure of the existing easement agreement area.

The No Build Alternative was evaluated as the “do nothing alternative” because it was required for comparison to other alternatives. It was not identified as the preferred alternative since other Build Alternatives (i.e., M-1, E-1A, and E-2) met all of the identified project needs with less severe social, economic, and environmental impacts.

2.2.2 Existing US 53 Alternative (Easement Agreement Area Remains Open)

The Existing US 53 Alternative, though not in compliance with the terms of the existing easement agreement, kept US 53 in place and open to traffic by addressing the economic, legal, and engineering

issues associated with resolving the terms of the existing easement agreement. The State of Minnesota would not have vacated US 53 but would have kept the highway open (**Figure 2.2-3**).

The Existing US 53 Alternative had substantially greater uncertainty and cost than any of the Build Alternatives; therefore, it was not selected as the preferred alternative.

2.2.3 Alternative M-1

All of the Build Alternatives considered in the Draft EIS assume construction of a new four-lane US 53 alignment. Alternative M-1 was routed through the active UTAC mine. From south to north, this alternative departed from existing US 53 approximately at Cuyuna Drive in the Midway area of Virginia. Approximately one mile of new four-lane roadway would have been constructed to mostly follow the grade created by the partially-backfilled¹ Auburn Pit through the UTAC mine. As shown on **Figure 2.2-4**, the new alignment connected back to existing US 53 approximately 1,000 feet east of the existing 12th Avenue traffic signal.

Alternative M-1 had substantial feasibility issues and resulted in severe negative mine operation impacts that were not offset by the benefits in minimization; therefore, it was not identified as the preferred alternative.

2.2.4 Alternative E-1A

Alternative E-1A was routed through the UTAC permit to mine and environmental setting boundaries, north of existing US 53 (see **Figure 2.2-5**). This alternative was added through the amended Scoping process described in Section 2.2 of the Draft EIS.

From south to north, this alternative departed from existing US 53 just north of Cuyuna Drive. The alignment crossed MN 135 between the existing US 53 interchange and Bourgin Road. The new alignment continued parallel to Bourgin Road before turning to the northwest to cross the Rouchleau Pit along an existing submerged haul road embankment.² After crossing the pit, the alignment turned to the southwest to reconnect with existing US 53 near 2nd Avenue. The road cross section was assumed to be constrained across the Rouchleau Pit (four lanes with a two-foot wide median barrier).

Two construction design options for crossing the Rouchleau Pit were evaluated for this alternative. The first was a reinforced soil slope (RSS) causeway/fill section (RSS Option). The second option was a bridge crossing of the pit (Bridge Option). Both options followed the existing submerged haul road across the Rouchleau Pit.

RSS Option

The Alternative E-1A RSS Option had feasibility issues and resulted in severe schedule and constructability impacts (i.e., it was unlikely to meet the timeline due to dewatering, with substantial risks for additional delays due to weather, mine waste fill, and design requirements to mitigate constructability concerns) that were not offset by the benefits in minimization of environmental impacts; therefore, it was not identified as the preferred alternative.

Bridge Option

The Alternative E-1A Bridge Option had feasibility issues and resulted in severe negative schedule impacts (i.e., it required the greatest construction effort to meet the timeline, with substantial risks for delays due to weather, mine waste fill, and design requirements to mitigate constructability concerns) that were not offset by the benefits in minimization of environmental impacts; therefore, it was not identified as the preferred alternative.

¹ Backfilled material is from local sources within the mine boundary.

² Backfilled material in this haul road is from local sources within the mine boundary.

2.3 Selection of Alternative E-2 as the Preferred Alternative

The Draft EIS identified Alternative E-2 with the Interchange Option as the preferred alternative, based on a variety of construction, cost, environmental, social, and economic factors, including mining operations and effects to the local economy. The Draft EIS reported that both the Straight Option and the Curved Setback Option were being carried forward for further refinement and that the selected option would be identified in the Final EIS. The Straight Option has since been identified as the selected option based on public and agency comments received during the Draft EIS comment period (see Chapter 11: Responses to Comments on the Draft Environmental Impact Statement), refinement of the design, and overall environmental impacts.

The preferred alternative is shown in [Figure 2.3-1](#). The reasoning used in selecting this alternative is described in Section 2.3.2. Chapter 8 of the Draft EIS (Consultation and Coordination) provides more information on agency and stakeholder involvement in the selection process.

2.3.1 Description of the Preferred Alternative (Alternative E-2)

Alternative E-2 is routed around the UTAC permit to mine and environmental setting boundaries. The following details for this alternative reflect refinements that have occurred since the Draft EIS, including a refined area of evaluation (with areas added for staging, snow storage, and a trail connection), selection of the Straight Option, agency coordination, and additional design detail.

2.3.1.1 Alignment

From south to north, Alternative E-2 generally follows existing US 53 from the south end of the Midway area to the MN 135 exit ramp for the start of new four-lane construction. As shown in [Figure 2.3-1](#), the new alignment then continues on a northeasterly track on the present day Landfill Road corridor before turning to the west to cross over the Rouchleau Pit. Upon crossing the pit, Alternative E-2 turns to the southwest following an abandoned railroad corridor that runs between the pit and residential neighborhoods before reconnecting to existing US 53 at 2nd Avenue.

MnDOT will remove all road facilities, such as pavement, bridges, and storm sewer, within the existing easement agreement area, and all utilities will be relocated by the utility operators. Areas of roadway that will be removed are shown in [Appendix B](#).

Two alignment options were considered for Alternative E-2 between Midway and roughly MN 135. Both options extend from Mesabi Drive on the south end to approximately the point where the Mesabi Trail crosses existing Landfill Road just north of the MN 135. The [Straight Option](#), the westerly route that closely follows existing US 53 and the exit ramp to MN 135, has been selected as the preferred option. This option minimizes new disturbance by following existing roads to the extent possible. It shifts east slightly just south of MN 135 to avoid UTAC's permit to mine/environmental setting boundary. This option also has less wetland impact than the Curved Setback Option.

The [Curved Setback Option](#) shifted east of existing US 53, similar to the alignment of Alternative E-1A south of MN 135. The purpose of this option was to facilitate staging of project construction and to minimize or potentially avoid encroachment on the mine setback from the road, shifting the alignment to the east at least 300 feet. The actual alignment shift exceeded 300 feet to also minimize impacts to the wetland that is located between US 53 and the Curved Setback Option alignment. This option was dismissed due to the greater wetland and right-of-way impacts, public and agency input, and the ability of the Straight Option to avoid the permit to mine boundary.

2.3.1.2 Local Access

The 2nd Avenue access will be converted from the existing partial interchange to an at-grade intersection. The existing 2nd Avenue interchange does not allow for turns from southbound US 53 to 2nd Avenue or from 2nd Avenue to northbound US 53. The new 2nd Avenue intersection will provide access to and from US 53 in all directions and will be signalized (intersection geometry shown in [Figure 2.3-2](#)).

The intersection access for MN 135 at US 53 will include, a compressed diamond interchange to provide full access between US 53 and MN 135, as shown in [Figure 2.3-3](#).

Access to Landfill Road will be maintained with a new at-grade connection approximately one-half mile north of the new US 53/MN 135 intersection. A median break in the US 53 corridor will allow for access to Landfill Road for travelers from both directions on US 53.

Access to the Midway neighborhood at Cuyuna Drive will be modified to a right-in/right-out only access by closing the median break at that location. A new median break will be constructed at Vermillion Drive to provide southbound traffic reasonable access into the Midway area. This new access point will provide improved sight distance and safety in this area. Southbound access out of Midway will be restricted to Bourgin Road (no median opening at Cuyuna and restricted median at Vermillion).

2.3.1.3 Design Features

The preferred alternative includes a constrained highway cross section in the following locations:

- Between the MN 135 interchange and the new Landfill Road access
- Between the new Landfill Road access and 2nd Avenue, approximately one mile (5,500 feet) long, in order to reduce the potential impacts along the west side of and across the Rouchleau Pit

The constrained cross section assumes median and outside barriers and steep side slopes ([Figure 2.3-4](#)). East of the Rouchleau Pit a continuation of the existing cross section from the south is planned. The new Landfill Road access median break will be located outside of the constrained cross section. The US 53 median at Landfill Road will provide a refuge for vehicles making turning movements across US 53.

The preferred alternative uses a bridge to cross the Rouchleau Pit. The pit is approximately 250 feet deep at the crossing location, and the bridge will span approximately 1,100 feet with 180-foot or taller bridge piers within the pit (a cross section of the proposed bridge is shown on [Figure 4.4-1](#)). As final design commences, design for the bridge will consider seismic effects of mining related blasting operations.

2.3.1.4 Project Elements Added Since the Draft EIS

Additional project elements have been added to the preferred alternative since the publication of the Draft EIS as described below.

- **Southern Project Limit Extended:** The Draft EIS identified the southern project limit for Alternative E-2 to be located between Cuyuna Drive and Vermillion Drive. MnDOT has identified an additional property, not under RGGS or MnDOT ownership, that the existing US 53 crosses over. This parcel extends between Cuyuna Drive south to approximately Mesabi Drive. The project limit has been extended to include acquisition of the portion of this parcel that the road lies within in order to secure the existing road right-of-way in perpetuity (see [Figure 4.2-2](#)).
- **Midway Area Access Change:** As described in Section 2.3.1.2, the Cuyuna Drive median break on US 53 was identified as an existing traffic conflict point with poor sight distance. This project creates the opportunity to improve that condition. MnDOT will close the median at Cuyuna Drive, limiting that access point to a right-in/right-out only intersection. A new restricted median opening on US 53 at Vermillion Drive will be constructed to provide southbound traffic access into the Midway area. The southern project limit was therefore extended to Bourgin Road.
- **Mesabi Trail Connection:** A segment of the existing Mesabi Trail that is on St. Louis and Lake Counties Regional Railroad Authority (SLLCRRRA) easement on privately owned land (RGGS) will be impacted by expanded mine activity (not by MnDOT), which would sever the trail between its segments east and west of the mining area. During development of the US 53 relocation project, RGGS/UTAC and SLLCRRRA expressed interest in relocating the Mesabi Trail concurrent with the construction of the new US 53 alignment to minimize impacts to trail users.

Since the Draft EIS was published, there has been further coordination between MnDOT, the Minnesota Department of Natural Resources (DNR), and SLLCRRRA regarding the future Mesabi Trail

alignment. MnDOT has made allowance for the future Mesabi Trail to parallel the new road alignment between the new Landfill Road access and the existing trail segment west of the Rouchleau Pit (see [Figure 2.3-1](#)). [Figure 4.4-1](#) illustrates the accommodation of trail use within the US 53 bridge cross section.

With this accommodation, there would still be a gap in the trail between the new and old Landfill Road access points. Accommodating a trail connection along the new US 53 alignment between the new and old Landfill Road access point to fill this gap would have substantial impacts as the US 53 alignment in this section is severely constrained by elevation, the OHVRA boundary, existing drainageways, and mineable lands.

SLLCRRA has identified an old railroad corridor under its ownership that crosses through the OHVRA and could be used make a connection between the Landfill Road end of the trail accommodated on the US 53 and the existing trail within the OHVRA, a distance of approximately 2,100 feet (see [Figure 2.3-1](#)). SLLCRRA has surface rights to the rail corridor and is willing to realign the trail to this location. This Mesabi Trail connection segment would be constructed by MnDOT but funded by state bonds through SLLCRRA.

Even though the impact of the mine expansion to the Mesabi Trail would not be caused by MnDOT, an evaluation of this short segment of new trail to connect the bridge and the existing Mesabi Trail has been added to the Final EIS in order to facilitate trail continuity between the severed trail sections that would result from mining activity in the easement agreement area.

- **Potential Staging Areas Identified:** Although staging areas are typically identified by the contractor, given the time sensitivity of this project, the known need for construction staging near the bridge crossing of the pit, and the difficulty that the pit topography poses, MnDOT has identified four areas for evaluation that the contractor may use for construction staging and access to the pit. One of these four areas will then be used as a snow storage area, as described below. The combined size of the two staging areas west of the Rouchleau Pit is approximately one acre, and the staging area south of the pit approximately two acres. These areas were previously disturbed by mining activities and have recently been cleared of vegetation and used for access to the pit for various data gathering and testing activities. The staging and snow storage areas are shown in [Figure 2.3-1](#), and evaluation of potential impacts are documented in the Final EIS under respective topic areas.
- **Snow Storage Area Identified:** In order to minimize winter road runoff from the constrained sections of the new roadway, MnDOT has identified an area that will be used for dumping snow from road plowing/clearing maintenance activities after project construction is complete. This area is approximately nine acres in size and is located approximately 0.8 miles northeast of the road alignment on the west side of Landfill Road in a previously disturbed area ([Figure 2.3-1](#)). It is also identified for potential use as a staging area during construction.

2.3.1.5 Area of Evaluation

The Draft EIS defined an “area of evaluation” for each of the Build Alternatives. These areas of evaluation were based on general design assumptions, estimated construction limits, the potential for additional right-of-way needs, and other design factors, and were used to evaluate physical impacts where ground disturbance was likely to occur under one or more construction option. For Alternative E-2, the Draft EIS included an area of evaluation that was widened across the Rouchleau Pit in areas where there was potential for design adjustments. It was determined that, due to the consistent vegetation/cover type within the widened area of evaluation, impacts would be similar regardless of where the alignment would be oriented within the widened area. To calculate potential impacts without overestimating them due to the widened area of evaluation, a corridor averaging 150-300 feet wide (representative of a standard four-lane undivided roadway) was assumed.

Since the Draft EIS, the area of evaluation has been refined to represent estimated construction limits of the refined preferred alternative. As a result, the reported impacts changed for some resources, and for others no noticeable change is noted as the refined design is consistent with the assumptions of the Draft EIS impact area (i.e., a corridor width representative of a standard four-lane undivided roadway).

2.3.2 Rationale for Selection

The Draft EIS identified Alternative E-2 as the preferred alternative based on its ability to meet the project Purpose and Need and minimize impacts to social, economic, and environmental resources, and on the basis of a number of technical and cost considerations, as described below.

As identified in the Draft EIS, the Interchange Option was selected for the preferred alternative over the Intersection Option. These options have similar social and environmental impacts; however, the Interchange Option will maintain the current access provided at US 53 and MN 135 and will provide safer approach grades from the east (two percent compared to six percent with an intersection), resulting in less potential for semi-truck/vehicle conflict. This reduction in grade will also reduce the earthwork and rock cut quantities required for construction.

After publication of the Draft EIS, the Straight Option was selected (over the Curved Setback Option) as part of the preferred alternative based on public and agency comment, refinement of the design, and less environmental impact. The Curved Setback Option would have greater impacts than the Straight Option as follows:

- One additional parcel impacted by right-of-way acquisition
- Two additional acres of wetland impacts
- 10 additional acres of forest impact

The Straight Option will have no greater impact than the Curved Setback Option to any resource.

Benefits of the preferred alternative include:

- Mineral Rights: Avoids the permit to mine/environmental setting boundary
- Business Risks: Has no risk for air quality compliance to impact mine operations
- Water Supply: Avoids the major dewatering that would be required for the Alternative E-1 RSS Option
- Wetlands: Has fewer wetland impacts than Alternative E-1A and Alternative M-1
- Noise: Noise walls are preliminarily cost effective at affected residential locations
- Right-of-Way: Impacts the fewest number of parcels of any Build Alternative
- Engineering and Constructability Considerations:
 - Shorter bridge than the Alternative E-1A Bridge Option
 - Only two pier foundations required, compared to up to eight for the Alternative E-1A Bridge Option
 - Less work required to construct in the water/ice of the Rouchleau Pit
 - Avoids 40 mph curve needed for Alternative E-1A
 - Has a better sight distance northbound from the bridge to the 2nd Avenue traffic signal than Alternative E-1A
 - Piers to be constructed in less than 30 feet of mine waste fill as compared to Alternative E-1A that would have up to 100 feet of mine waste fill

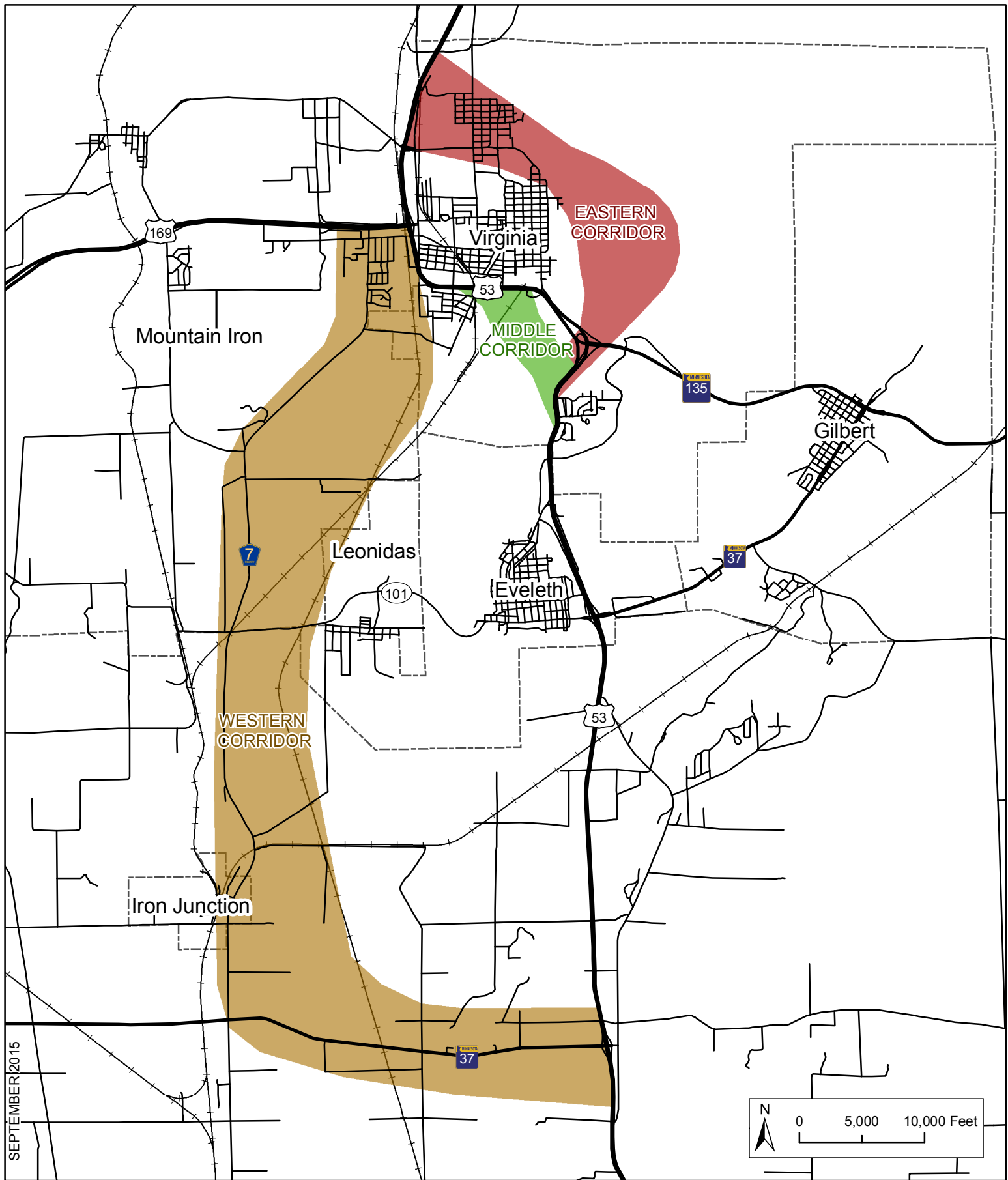
- Schedule: Has the least schedule risk due to engineering constructability considerations noted above as well as considerations related to owner and operator property interests
- Cost: Costs significantly less than the Existing US 53 Alternative and Alternative M-1, and the upper range of the cost estimate is less than that for either the Alternative E-1A RSS Option or Bridge Option

The negative effects of this alternative are less than other alternatives evaluated, and include:

- Mineral Rights: More mineral encumbrance than Alternative E-1A; requires greater impact to School

Trust land and, therefore, has potential for greater impact to Vermillion Gold, Inc.'s lease than Alternative E-1A

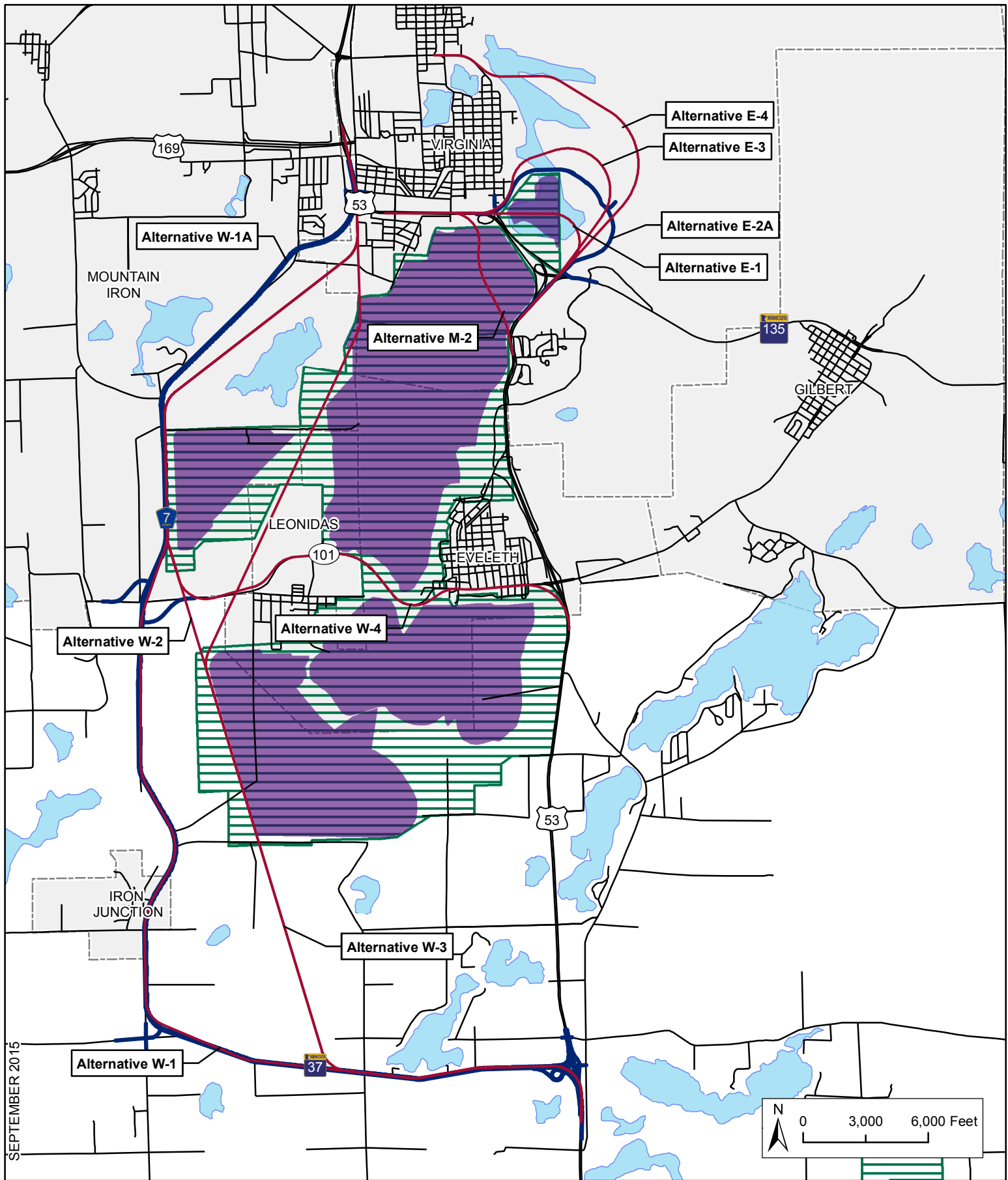
- Section 4(f): Impacts the OHVRA; however, the impact is negligible and meets the definition of de minimis
- Vegetation/Cover Types: Impacts more acres of forest than other alternatives; however, impacts to wildlife are negligible and MnDOT has committed to conducting tree clearing outside of the summer roosting season for the northern long eared bat per US Fish and Wildlife Service (USFWS) recommendation
- Unknowns: Requires additional geotechnical characterization at pier locations



SEPTEMBER 2015



Figure 2.1-1
Studied Corridors
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement

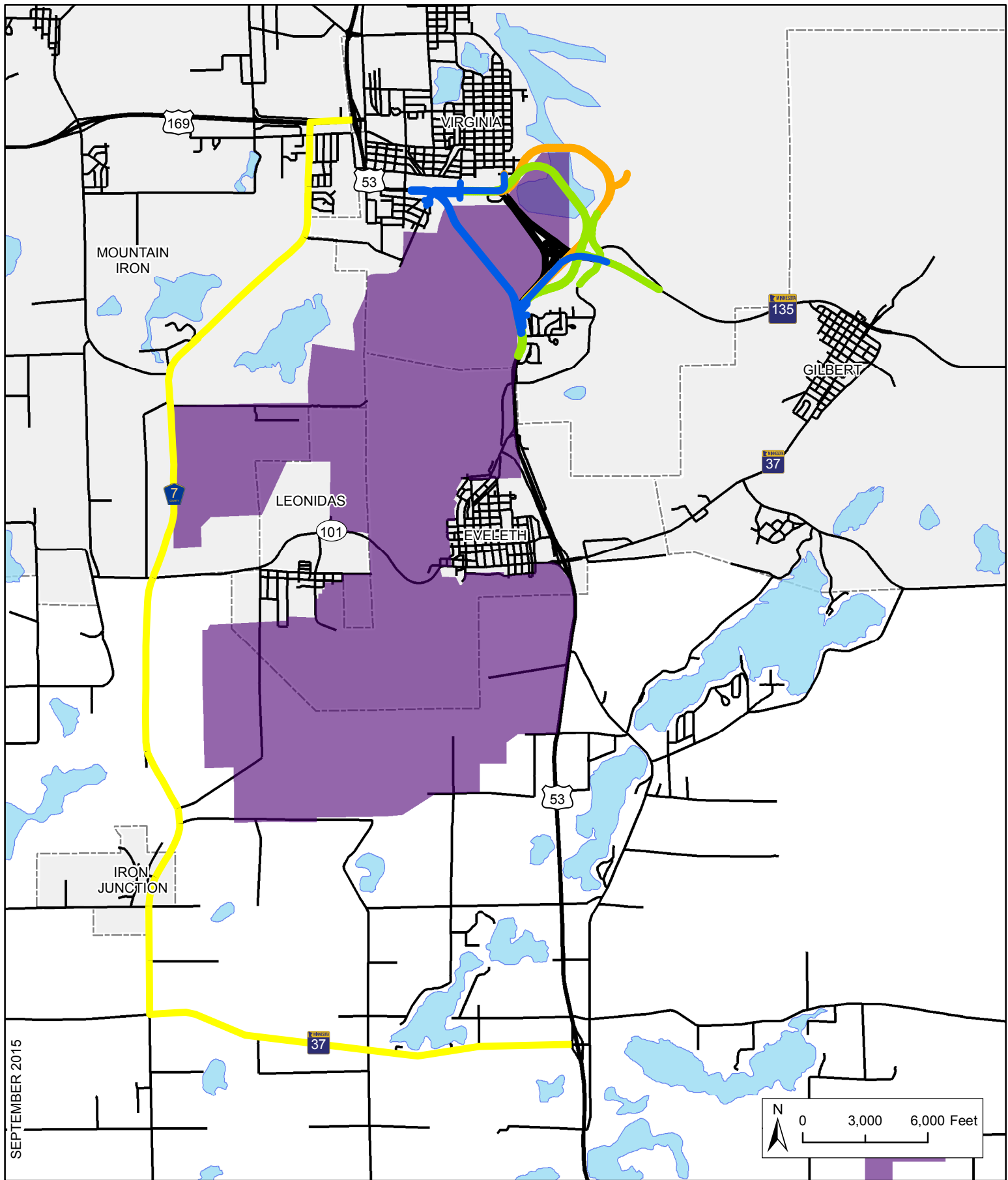


Legend

- Alternatives Dismissed During 2012 Scoping Process
- Alternatives Dismissed During 2013 Amended Scoping Process
- UTAC Permit to Mine Boundary
- UTAC Environmental Setting Boundary
- Municipalities



Figure 2.1-2
Alternatives Dismissed During Scoping
US Highway 53 Virginia to Eveleth
Final Environmental Impact Statement



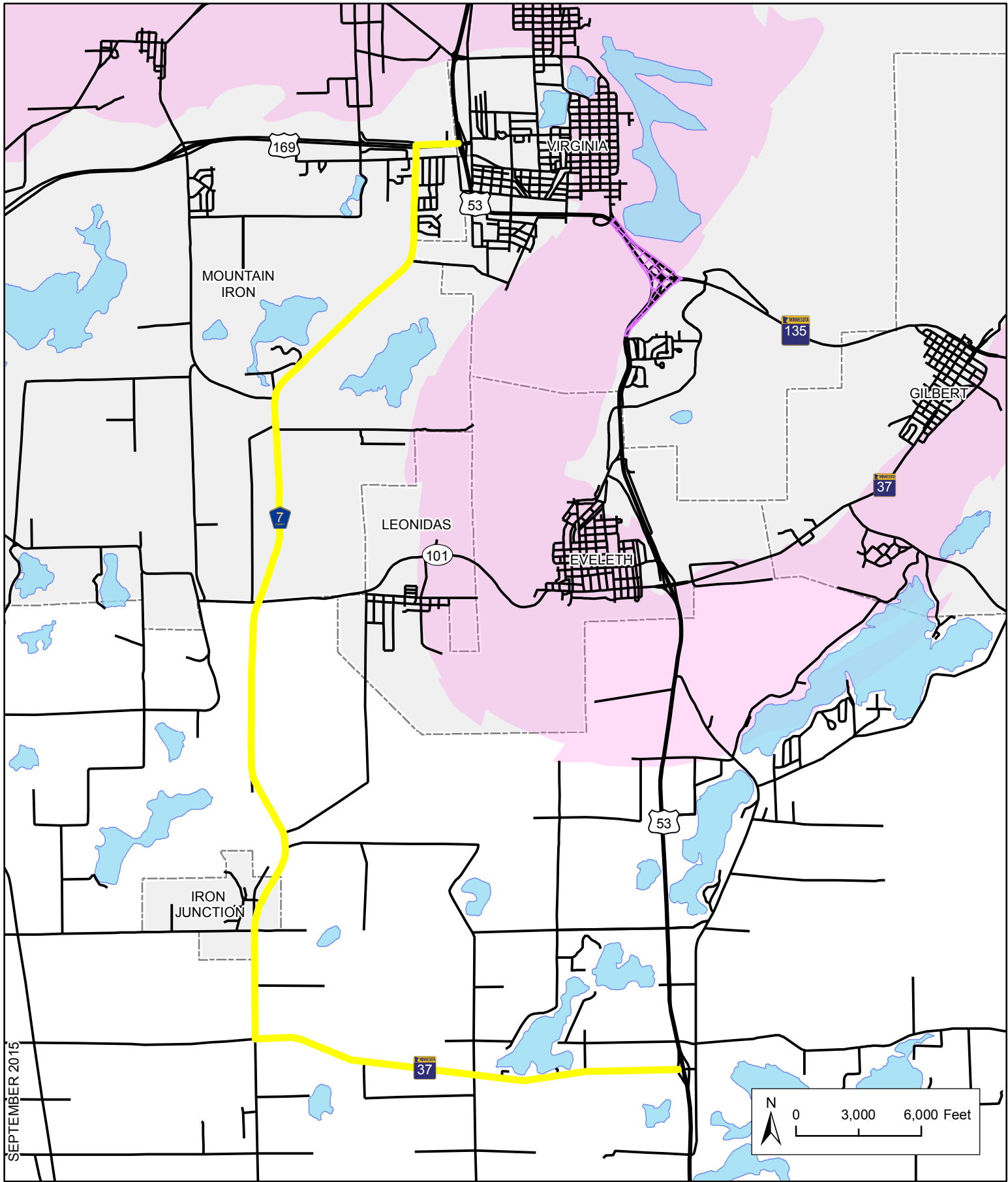
Source: Environmental Setting Boundary (DNR)

Legend

- | | |
|---|--|
| — No Build Alternative | — Alternative E-2 |
| — Existing US 53 Alternative | UTAC Environmental Setting Boundary |
| — Alternative M-1 | Municipalities |
| — Alternative E-1A | |



Figure 2.2-1
All Alternatives Studied
in the Draft EIS
US Highway 53 Virginia to Eveleth
Final Environmental Impact Statement



Legend





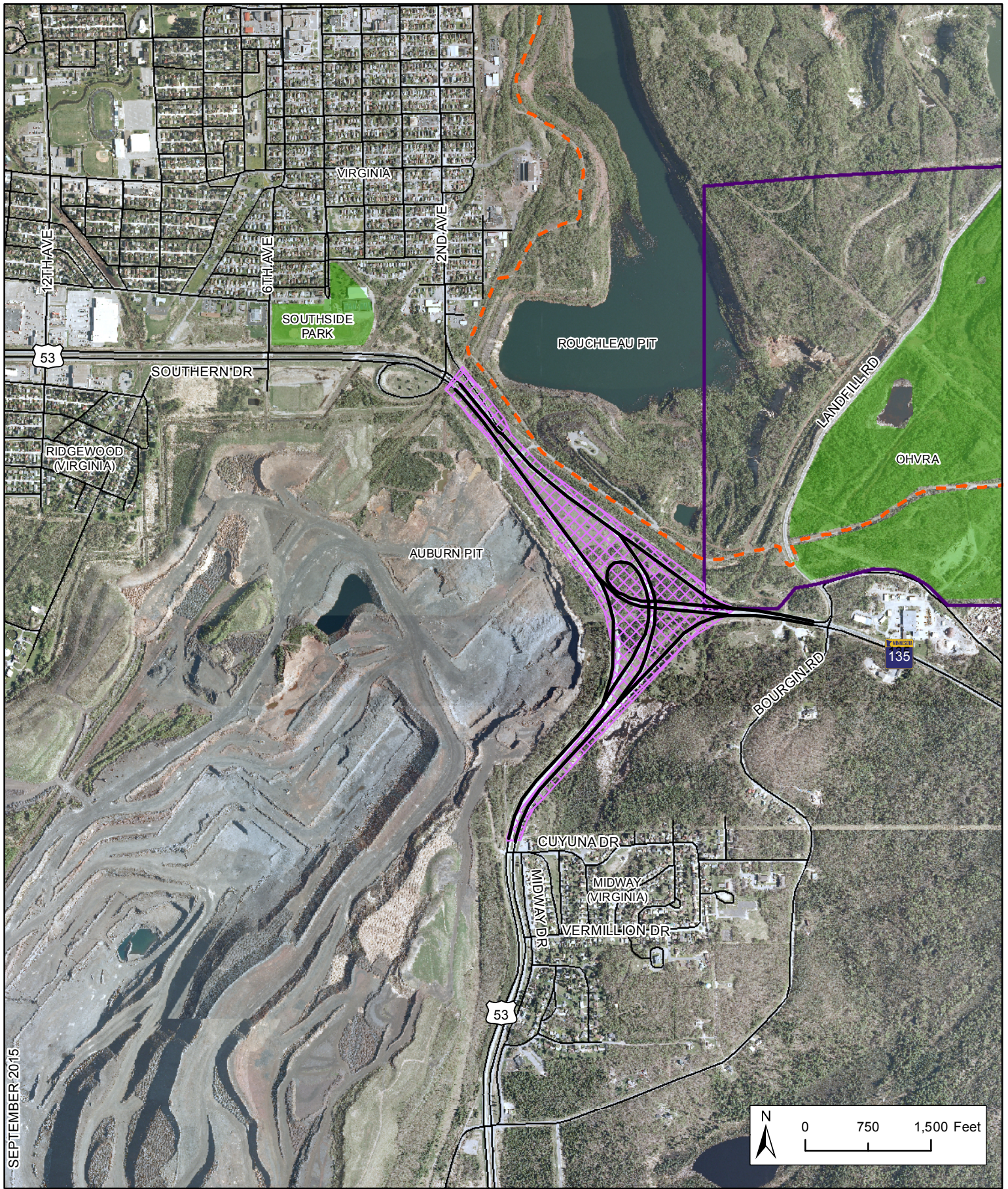
-  Existing US 53 Easement Agreement Area
-  No Build Alternative
-  Biwabik Iron Formation
-  Municipalities



Figure 2.2-2
No Build Alternative
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement

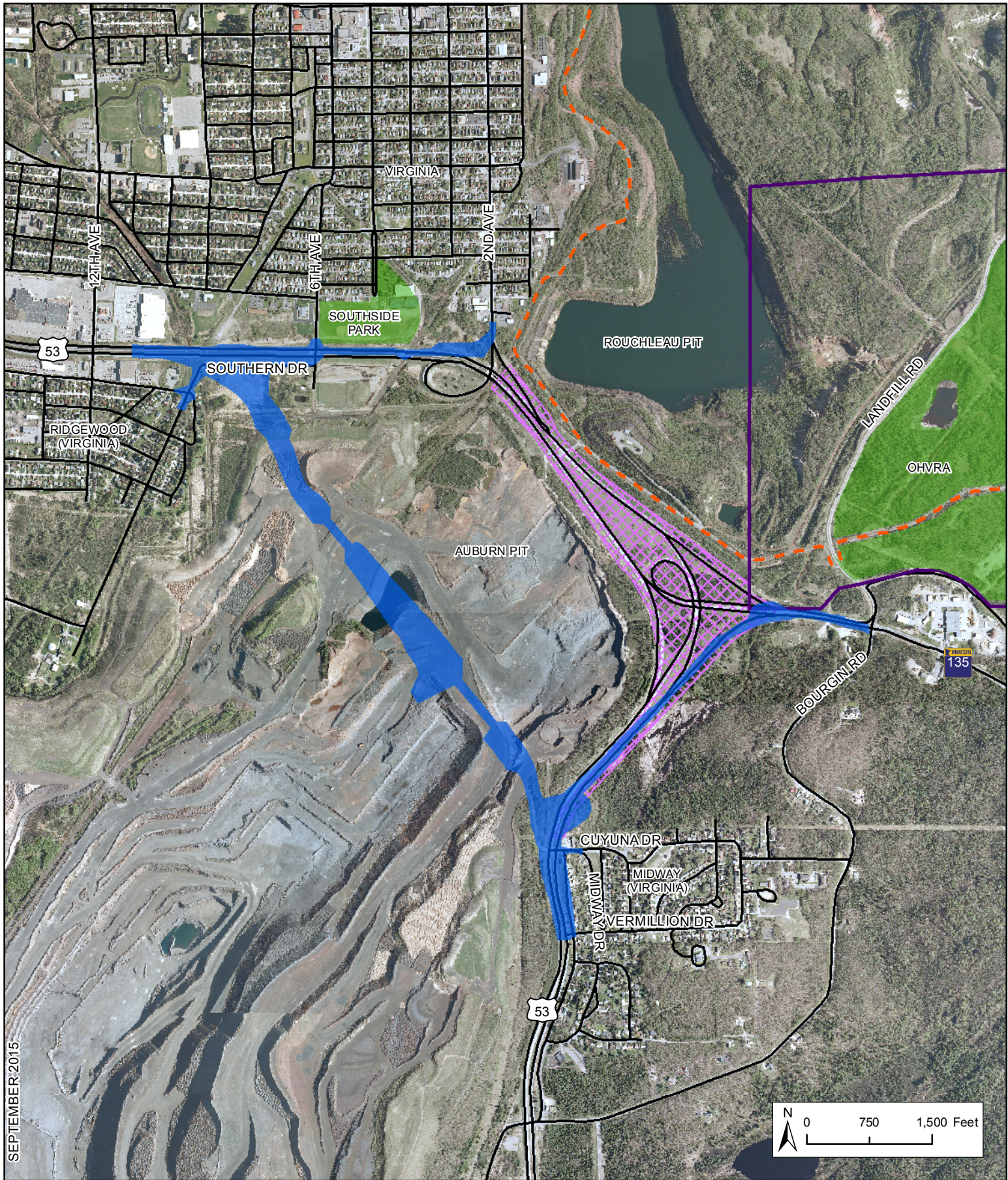


Legend

- Existing US 53 Alternative
- Existing US 53 Easement Agreement Area
- Existing Mesabi Trail
- Existing School Trust Land



Figure 2.2-3
Existing US 53 Alternative
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement



Source: USGS Aerial 2009



Legend






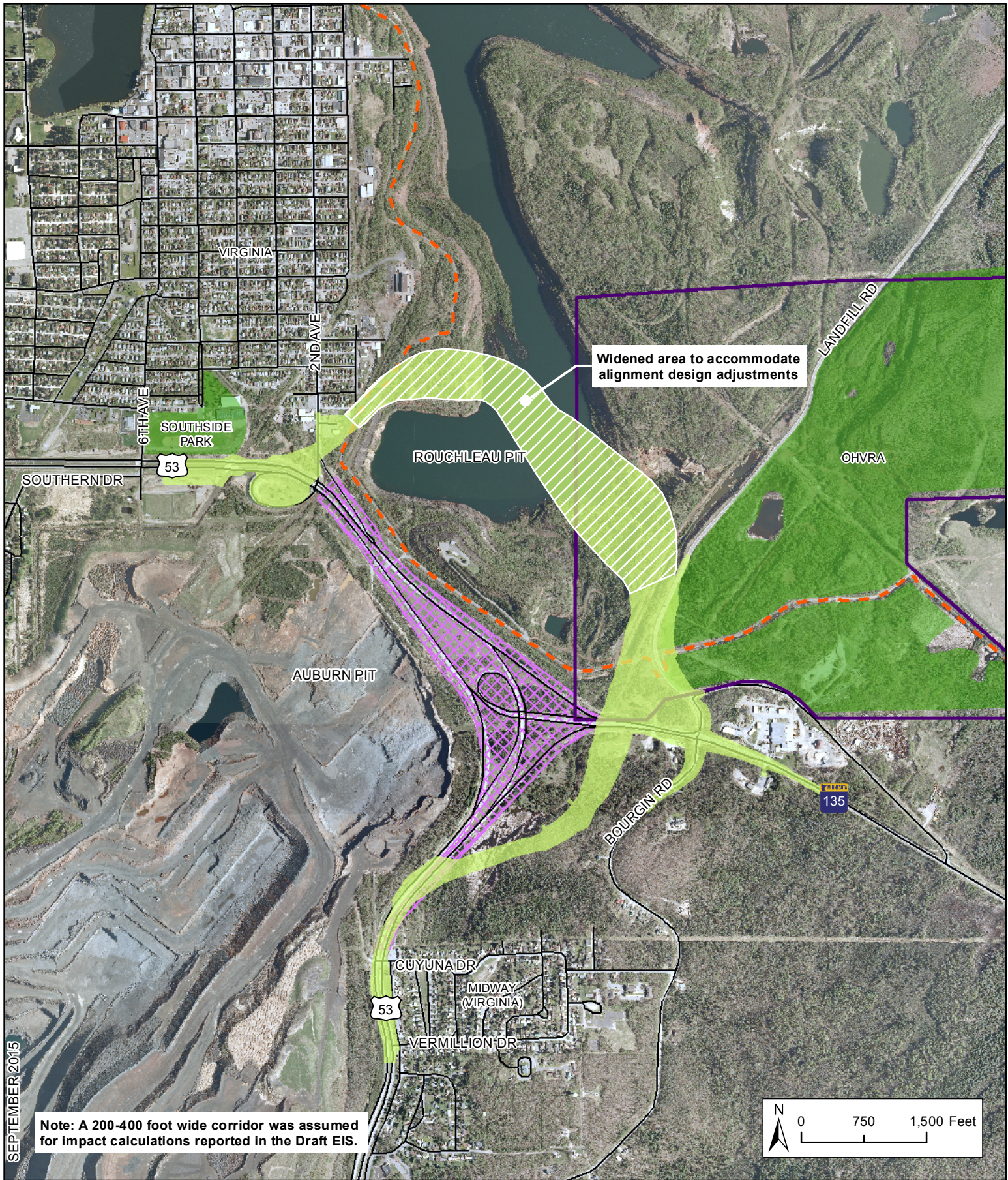
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|  Alternative M-1 Area of Evaluation |  Existing Public Recreation Land |
|  Existing US 53 Easement Agreement Area |  Existing School Trust Land |
|  Existing Mesabi Trail | |

Figure 2.2-4
Alternative M-1
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement

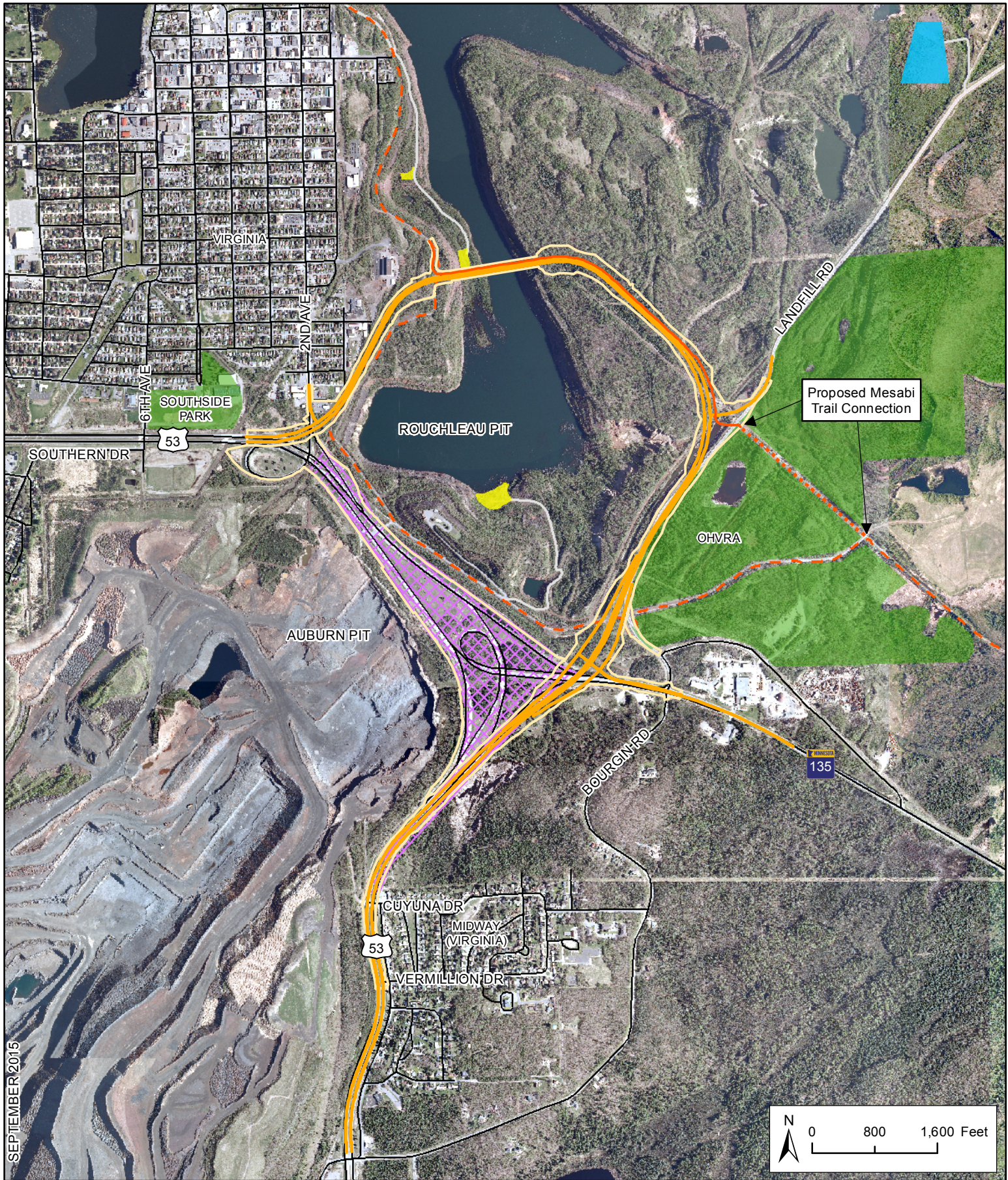


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| | Alternative E-1A Area of Evaluation | | Existing Mesabi Trail |
| | Existing US 53 Easement Agreement Area | | Existing Public Recreation Land |
| | Existing School Trust Land | | |



Figure 2.2-5
Alternative E-1A
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement



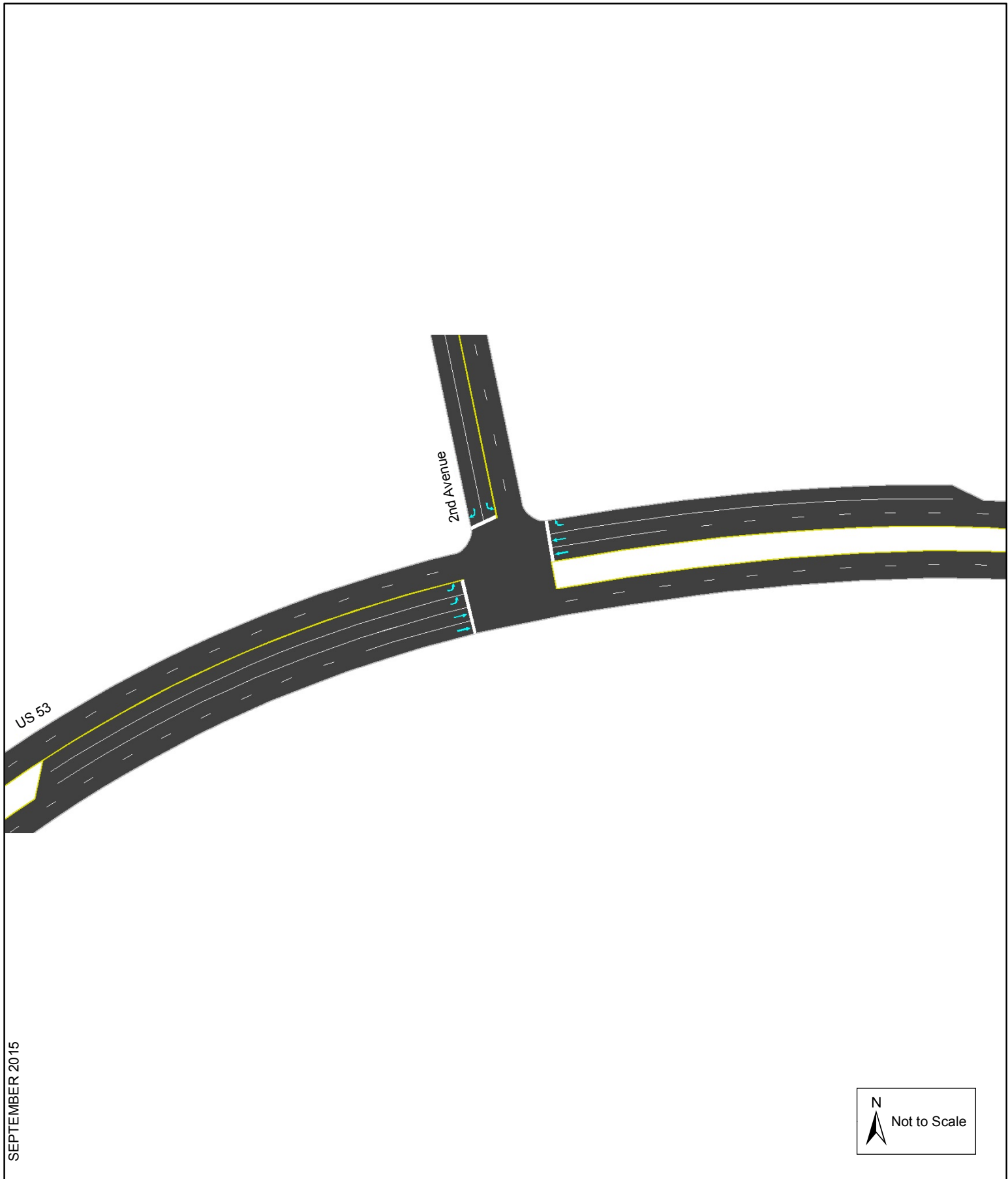
Source: USGS
Aerial 2009

Legend

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|--|---|
| — Preferred Alternative | Staging Areas |
| --- Construction Limits | Snow Storage/Staging Area |
| --- Realigned Mesabi Trail | --- Existing Access Roads |
| --- Proposed Mesabi Trail Connection | Existing Public Recreation Land |
| --- Existing Mesabi Trail | Existing US 53 Easement |
| | Agreement Area |



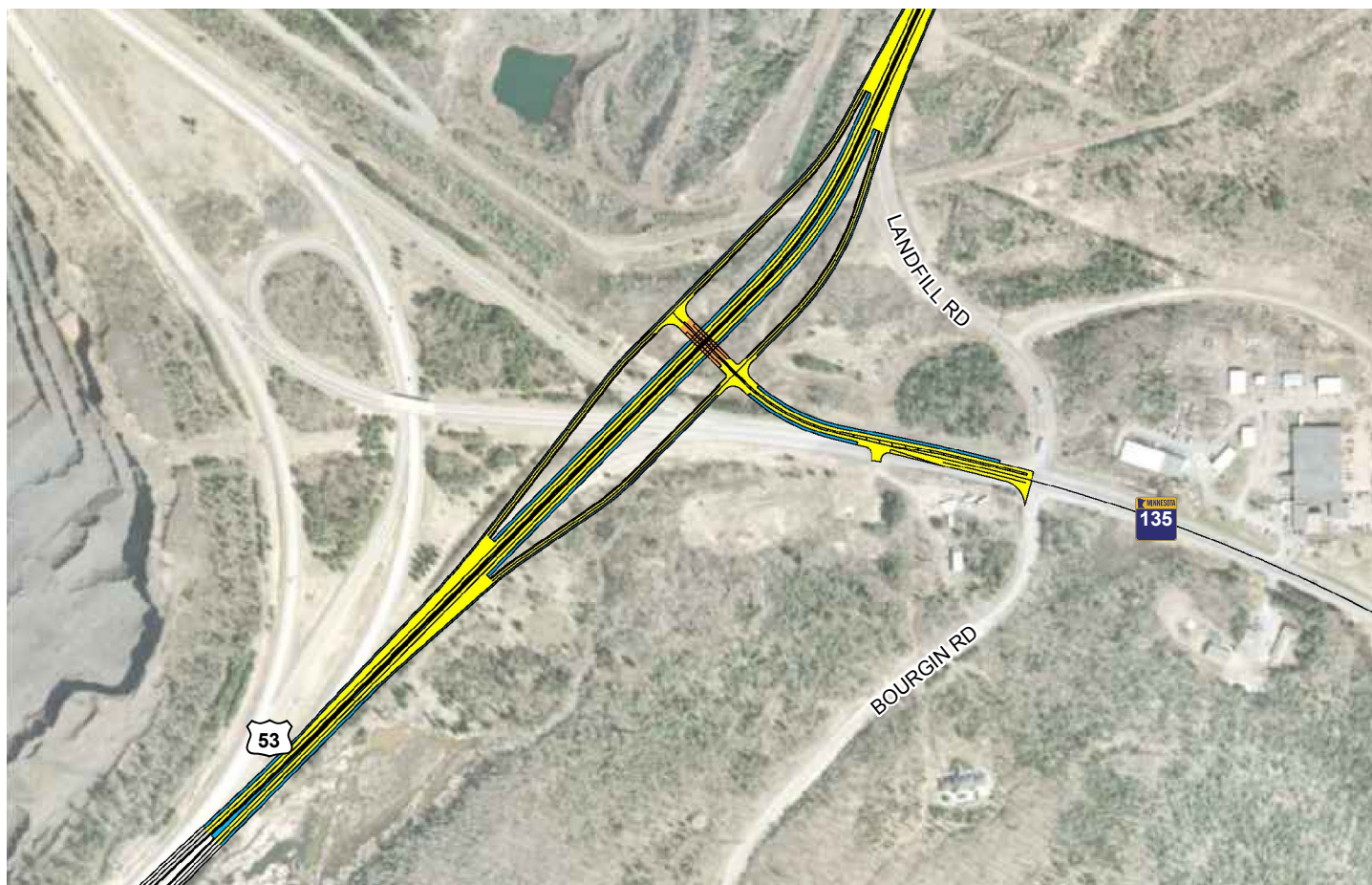
Figure 2.3-1
Preferred Alternative (Alternative E-2)
US Highway 53 Virginia to Eveleth
Final Environmental Impact Statement



Source: Traffic Analysis Technical Report (2013)



Figure 2.3-2
2nd Avenue Intersection
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement

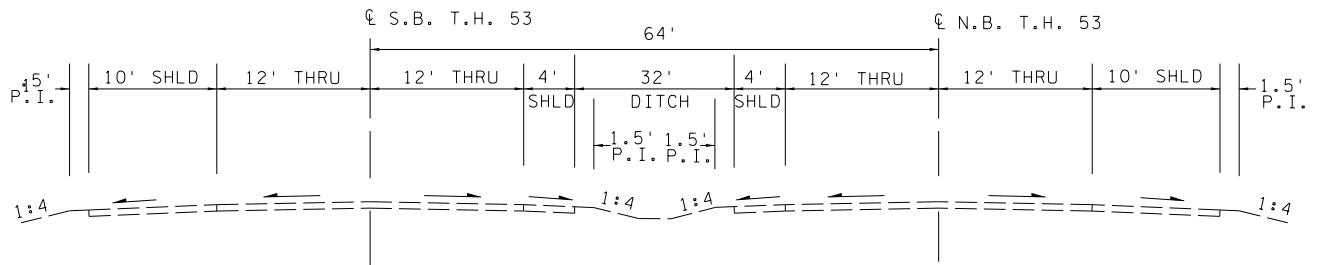


SEPTEMBER 2015

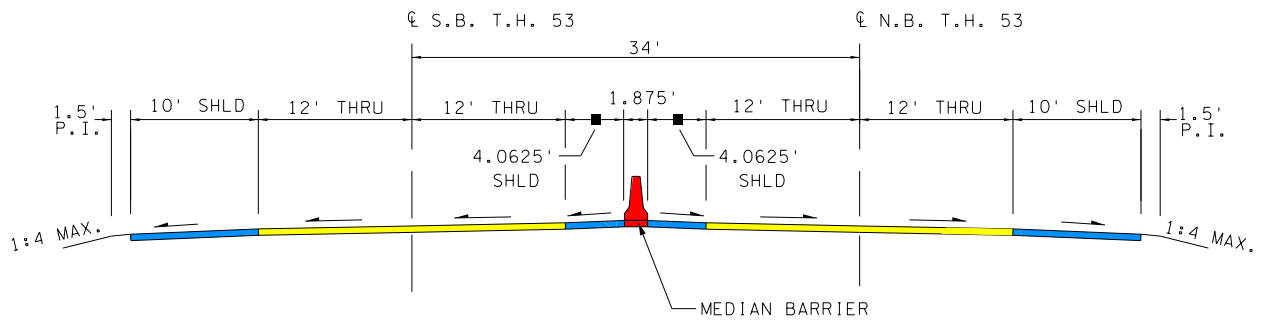


Figure 2.3-3
MN 135 Interchange
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement

Existing US 53 Cross Section



Proposed Constrained Cross Section Without Trail



SEPTEMBER 2015

Source: SEH Layout 11/27/2012



Figure 2.3-4
Existing and Proposed Typical Cross Sections
 US Highway 53 Virginia to Eveleth
 Final Environmental Impact Statement